

SEPT/87

ZX-Appeal

Vancouver sinclair
users group

next meeting:

KILLARNY COMMUNITY CENTRE
6260 KILLARNY STREET
VANCOUVER

FRIDAY; 7:00PM

SEPT 11/87

media

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ZXAppeal is a monthly
newsletter put out by the
Vancouver Sinclair Users Group.
For more information on the
group and ZXAppeal see the backcover.

TIMEX sinclair 2068

ZX81

Happy Birthday
VSG

sinclair
QL

...imagine, 5 years old
and better than ever!

TIMEX sinclair 1000

With the days getting cooler, the kids back in school, and vacation time over, we can get down to some serious computing. The Main Event for the next while is the upcoming T/S Mini-Fair in Seattle. Enclosed with this issue is a sheet with all the information you'll need. Let's discuss options at the meeting. Pooling, renting a bus, etc. Everyone who plans to go to Seattle should make sure they're at the meeting.

This issue has some interesting programs and articles: Fred Nachbaur, our 1000 wizard resided in Nelson, fresh from his victory over the Feds, sends along a preview of an article on the PC 8300 that will appear in an upcoming issue of SyncWare News. This is a good follow-on to Ken's article of last issue as Fred explores some of the areas touched on by Ken. What is more exciting is that Fred has finished his TS/PC8300 ROM project. This ROM, actually an EPROM, will allow the running of ALL machine code, and BASIC, programs made for the 1000 at the same time allowing many of the neat features of the 8300: sound; flashing cursor; inverse screen, and many others, maybe even colour if Wilf can come up with a fix for the 'PAL' standard colour pack. The 'TS8300' now does almost all the things we wished the ZX81/TS1000 would do. I know as I have one of the prototype ROMs and I can faithfully report "IT WORKS!". So get a PC8300, I'm told there are only 10,000 left in the warehouse so hurry, and then get the EPROM from Fred when it becomes available in numbers very shortly. Then you die-hard '81ers will have the 'best of all worlds'. Also in this issue Harry S. comes in with a handy little program to convert the various computer codes: hex to dec to bin, etc; Vince L. sends along another of his programs concerning memory management for the 1000; Jay M. offers a program for the 2068 that allows for the storing and recalling of multiple

screens; we have the next installment of 'Buzz Words' to broaden our mental horizons; and finish off with some more great reprints from the NETWORK.

BITS & PIECES.....

...we welcome another exchanger to the Network: VISTA, the newsletter of the Vashon, Washington T/S users.

...you've all heard of the Rotronics Waferdrive for the Spectrum:- dual high-speed tape drives plus RS232 and Centronics printer interfaces all on one unit able to store up to 64k on one tape. Well, as seems to happen with some degree of regularity, this company went bankrupt. Now these units that once cost US\$150.00 can be bought from Britain for 15 Brit pounds - thats about \$35 in our money plus another \$10 for express mail to your door and the price is so low that there won't be any duty.

For more info or to place an order, send to: Logic sales Ltd., Leofric Square, Peterborough, TE15TN, Gt. Britain.

...as was mentioned above, Fred Nachbaur has finished his EPROM that allows one to run TS m/c programs on the PC8300.

...Sunset Electronics of San Francisco is still in the TS marketplace in a strong way. Their latest hardware and software catalog supporting all TS machines arrived recently. For your copy write to: 2254 Taraval Street, San Francisco, CA 94116.

...also mentioned above was the Seattle TS Mini-Fair on Sept. 26. This will be a most memorable time so make sure you plan to BE THERE, or be square.

...also coming soon will be the Pacific Coast Computer Fair put on each year by the PCCFA. If you helped man the VSUG table last year or just wandered around you'll remember it was a great time. Remember when Harry S. bought those 4 1000s off the strange lady for \$20 each? I bought one:- bad power supply but new machine. Hopefully more news of this years 'do' will be available at the meeting.

...meeting date!

SEPTEMBER

S	M	T	W	T	F	S
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30
..



PC 8300 INTERFACING ALERT

by Ken Abramson

My Preliminary Technical Report (ZX Appeal, July/August 1987) indicated that the missing edge connector/CPU control lines were simply connected straight from the CPU to the edge connector. Upon closer examination of the computer circuitry, Harry Slot has advised against this approach, because a few of these CPU control lines are also connected to the ULA chip, which he feels could be damaged if these lines are pulled low (at the wrong time) by some external peripheral device. These lines should probably be isolated by diodes, pullup resistors and series resistors before connecting them to the outside world via the edge connector. Hopefully Harry will publish his safe solution as soon as he gets it checked out.

P.S. In case you were interested in the PC8300 color pack, don't be! It has been determined that the color pack will not work on NTSC (North American) TVs. It only works with the PAL (British) system. American Design Components is now looking for a fix in order to make it work here, but unless you are electronically adventurous, send it back!



Installing non-volatile ram in the 8-16k region in the TS1000 allows the area to be used as a ramdisk. I have several favorite machine language programs which will only run at a specific location above ramtop. Rather than rewriting the programs, this utility will store the programs in the 8-16k region and allow even programs of different lengths to be swapped above ramtop without disturbing the program in the normal working area.

To use this utility first load your M/C program and calculate the number of bytes it contains. Let the program load itself above ramtop and then load this utility. You will be asked the location of ramtop, the number of bytes in your M/C code program and where in the 8-16k region would you like to store your M/C program. Once completed you will be given a menu with two RAND USR calls. The first one resets ramtop and the second one loads the M/C program. This procedure can then be repeated storing a different program taking care not to overlap the addresses. Each program will have it's own unique RAND USR calls but they can be joined together in a basic program to allow menu driven loading.

For an explanations on the two M/C routines used in this program, Reset Ramtop is borrowed from "Syncware News Volume One" and Loading Blocks is borrowed from "Mastering M/C on Your ZX81."

```
9000 LET M$="5?RAND RAND 5876. RAND
FOYF RAND FF6?RAND??>=)875 RUN
6 GOSUB TAN "
9010 REM
```

```
M$ :CONTAINS 35 SPACES
RUN 9590 :TO LOAD M/C TO M$
```

```
9020 CLS
9030 LET A=0
9040 GOTO 9170
9050 LET H=INT (A/256)
9060 LET L=A-(H*256)
9070 RETURN
9080 INPUT A
9090 FAST
9100 CLS
9110 FOR C=0 TO 21
9120 LET H=PEEK A
9130 LET L=INT (H/16)
9140 PRINT A;TAB 6;CHR$ (L+CODE
"0")+CHR$ (H-16*L+CODE "0");TAB
9;H;TAB 13;CHR$ H
9150 LET A=A+1
9160 NEXT C
9170 SLOW
```

```
9180 PRINT AT 0,23;"INSTALL";AT
2,23;"SEARCH";AT 4,23;"CONTINUE"
;AT 6,23;"QUIT"
9190 IF INKEY$="I" THEN GOTO 924
0
9200 IF INKEY$="S" THEN GOTO 908
0
9210 IF INKEY$="C" THEN GOTO 909
0
9220 IF INKEY$="Q" THEN GOTO 965
0
9230 GOTO 9190
9240 CLS
9250 PRINT "INSTALL:","","SET RA
MTOP TO?"
9260 INPUT A
9270 LET A=A
9280 GOSUB 9050
9290 LET M$(6)=CHR$ L
9300 LET M$(7)=CHR$ H
9310 LET M$(28)=CHR$ L
9320 LET M$(29)=CHR$ H
9330 PRINT A;"NO. OF BYTES?";
9340 INPUT N
9350 LET A=N
9360 GOSUB 9050
9370 LET M$(25)=CHR$ L
9380 LET M$(26)=CHR$ H
9390 PRINT N;"INSTALL PROG. TO?"
/
9400 INPUT U
9410 LET A=U+35
9420 GOSUB 9050
9430 LET M$(31)=CHR$ L
9440 LET M$(32)=CHR$ H
9450 FAST
9460 CLS
9470 PRINT AT 3,0;"MENU",""
;TO","R","RAND USR ";U,"CHANGE RAMTOP
LOCK MOVE","START ";U+35,"E
ND ";U+34+N,"TO RAMTOP";AT
21,9;"PRESS ENTER TO CONTINUE"
9480 FOR A=1 TO 35
9490 POKE U,CODE M$(A)
9500 LET U=U+1
9510 NEXT A
9520 FOR A=1 TO N
9530 POKE U,PEEK R
9540 LET U=U+1
9550 LET R=R+1
9560 NEXT A
9570 INPUT I$
9580 GOTO 9020
9590 LET S$="215B40F921247722044
02B363E2BF92B28220240C3750601DC0
811247721F722EDB0C9"
9600 LET L=16513
9610 FOR A=1 TO LEN S$-1 STEP 2
9620 POKE L,16*CODE S$(A)+CODE S
$(A+1)-476
9630 LET L=L+1
9640 NEXT A
9650 CLS
```

Fred Nachbaur

You may have seen ads, or heard about a "Timex 1000 clone" called the PC8300, available from a company in New Jersey doing business as "American Design Components." The price is certainly attractive (\$29.95), as are the claims that are made for this device. A TS1000 clone with music and sound, auto line numbering, moving keys, joystick port, TV/monitor option, high-res capability, and even a color add-on? For 29.95? How can this be?

As an avowed ZX81 programmer (perhaps one of the last), I couldn't resist the ad; especially since I've been interested in this machine for over two years! That's right, the history of the PC8300 goes back that far. About two years ago, it was reviewed in a British magazine, and was said to be available from a Canadian company for Cdn. \$29.95. A colleague contacted them some time later, only to get the reply that they would not be carrying it after all, and didn't know where it could be obtained. Imagine our surprise and gratification when it suddenly reappeared!

On receiving my PC8300, the plot thickened even further. It is made in Hong Kong, but no indication is given as to the manufacturer, designer, or ROM programmers. The box is labelled "YOUR COMPUTER." Apparently, in true Hong Kong style, the manufacturer left it open for any distributor to stick his own label on the unit. [However, my friend at the local Chinese restaurant assures me that the manual is written in Continental - Beijing - Chinese, not "Hong-Kong-ese."]

What you get is the computer, a TV/monitor cable, cassette cable, power supply, and two "manuals." I put the last in quotes, since neither of these publications is what I would consider an adequate user manual. The first is entirely in Chinese, except for the sample BASIC listings. The other is a very crude translation beleaguered with typos, and might as well be in Chinese. It's so crude that it's cute; one sentence starts with, "If you don't see the blinding cursor...." Neither gives much technical information; only the bare minimum to get up and running, and program in BASIC, is provided.

If you're expecting an actual ZX81 clone with superior capabilities, forget it. Though it is similar, it is different enough to be useless with any Sinclair programs that contain machine-code. More about that later. However, if like me you're running a computer orphanage, this machine is a MUST HAVE. It is eccentric yet capable, simple yet complex, and absolutely charming.

The machine is reminiscent of the TS1500 or Spectrum, in that it has rubber chiclet keys. Dual shift keys are provided (thankfully, since the key spacing is larger than the 1500). The keyboard is sloped, giving a nice feel. The keys have an unfortunate tendency to stick; perhaps this tendency will decrease as the keys "break in."

The case is ivory colored, quite sturdy, and sits nicely on the table. The case comes apart by removing three Phillips screws, then snapping it apart. The power supply has an actual AC power cord running into it; a nice feature if, like me, you have octopuses (octopi?) of adaptors and extension cords always underfoot.

The TV/monitor cable has an RCA plug at one end (to go to the computer), and an "F" connector at the other. You may have to change this to an RCA plug, depending on your monitor or TV. A "TV/GAME" switch is not provided. The display is in preferred (to me) "reverse video" (white characters on dark background).

Looking inside, it looks definitely Sinclairish. There is of course the 7805 regulator and heatsink, Z80 CPU, ROM, and a 2116 static 2K RAM. There is also space on the board for four 2114's. Near the (soldered in) keyboard tail is a 74LS05. The last major component is a custom chip, analogous to the Sinclair's ULA. If you thought that the ZX81 ULA was an interesting "black box," you'll love this one. It apparently handles all the jobs of the Sinclair ULA, and then some. For instance, it seems to take care of the sound, blinking (blinding?) cursor, and probably has something to do with the color add-on. Sundry diodes and transistors round out the semiconductor complement. A small 1" speaker delivers a

surprisingly loud "beep."

The machine's sound capability is obvious the first time you turn it on. After that, any keypress elicits a beep. Each key has a different tone, making routine typing sound a John Cage composition. Thankfully, this can be turned off by entering NOBEEP. To quote from the manual,

"So many sound!" you may think. "May I play my computer more quietly?" The answer is sure. You can simply type NOBEEP then ENTER. Now the computer is in No BEEP mode, and no any sound will be responded when you press the keys. Later, if you like to have beep sound again, you type BEEP then ENTER. Now the computer already in BEEP mode, and the keys will respond it's lively sound if you activated any key."

Syntax errors give a flatulent Bronx cheer, even if NOBEEP was invoked; this machine really likes to rub it in! The machine also has TEMPO, SOUND and MUSIC commands. These are actually pretty neat, even though only a single voice is possible, and no envelope or waveform control is provided. Also, they behave differently in SLOW than in FAST; some interesting noises are possible because SLOW mode modulates the sound with a 50 Hz. buzz (yes, 50 Hz. not 60).

This points out the first difference between the PC8300 and American ZX81's. Running at 50 Hz. makes it slightly faster (though not twice as fast as some have claimed). However, it might be out of range for the vertical hold control on some TV's. (See Part II for more info on this.)

Another major difference is in the memory map. Unlike the ZX81, the display file is in a fixed location, starting at 16509. The display file is always fully padded out. (Presumably, by getting rid of all the collapsed display-file stuff, the designers were able to fit some additional command routines into the 8K ROM.) The system variable D_FILE is replaced by PROGRAM, which gives the start of the program area (normally 17302d). The fact that a system variable is used for this, suggests that this can be moved (perhaps to accommodate a high-res display file). The end of the program area is marked with an FFh. The variables are next, pointed to as before with variable VARS. The end of the variables area is still marked with an 80h.

System variable VERS is apparently used for flag purposes; it contains 40h after reset, 00 after NEW or power-up, and FF after SAVE. Variables NXTLIN and E_PPC are exchanged to 16394 and 16425, respectively. The "not used" variable at 16417 is called MUNIT, and sets TEMPO. The unused variable at 16507 is now a two-byte variable called BLINK, which points to the location of the cursor in the display file (similar to XPTR).

The rest of the system variables remain the same. Also, organization and storage of variables appears identical. However, the difference in the memory map makes every known ZX81 machine-code program inoperable on the PC8300. Also, the ROM has been drastically changed around, so any ROM calls would have to be readdressed for this machine. In light of this, I don't feel that the claim of "ZX81 compatibility" is justified.

Now for some good news. The PC8300 WILL load all-BASIC ZX81 programs. If you think about it for a moment, you'll realize that this is no small feat, since the display file and program area are interchanged. Also, some of the token codes are different. Again, the custom chip, together with the ROM, appears to be involved in this. When the PC8300 saves a program, the 5-second "silence" is replaced by a continuous tone; perhaps this is how it tells its own programs from ZX81 programs, changing things around if required.

You guessed it, even with all-BASIC there are incompatibilities. Most importantly, the variables area of ZX81 programs are NOT loaded by the PC8300. So any program that relies on its saved variables for data is completely useless on the PC8300. Also, some of the punctuation has been replaced by space-invaders and suchlike. Specifically, colon is a space invader, question mark is a pac-ghost, and the British pound sign is another space invader. Also, the grey graphics are now different; CHR\$ 8 and 136 (the grey squares) are now a race car, and the rest are right-triangle graphics. Sure looks funny on some ZX81 screens! The final incompatibility is that PC8300 programs will NOT load into the ZX81 or TS1000.

(Obviously, since it will be trying to run the display file in its program area. CRASH!!!)

There is better news in the hardware department. The extension bus is identical to the ZX81/TS1000, except for the omission of some less-often-used control lines. Timex 16K RAMpacks work fine, as does our SCRAM board. I've also tried a John Olinger EPROM reader. Interestingly, the Memotech 64K (or the others I have here) do NOT work.

If you're used to the keyboard layout of the ZX81, you'll be lost when you first use the PC8300. Nothing is where you expect it to be. The FUNCTION mode has been done away with entirely; all you have is the shifted keys, and graphics mode (shift ENTER). Shifted keys give the symbols and some of the tokens. The only available command keyword is PRINT (shift Z, of all things); all the rest are functions like SIN, ACS, etc. The rest of the function and keyword tokens have to be entered manually. However, they are tokenized in the listing, just as on the ZX81. Spaces during line entry are insignificant, and are automatically inserted between tokens.

The designers obviously went for the programmable calculator market; there is even a chapter in the manual on using it as a calculator. While they were at it, they tried to suggest that it is a games machine by including a few (practically useless) games characters. The rest of the shifted keys are things like cursor control (C through N), EDIT (M), DELETE (.), auto LINE NO. (X) and BREAK (space). BREAK is interesting in that it can be used much like EDIT to delete an entire input line; however, it does not bring down the line number with the cursor, as EDIT does. STOP during INPUT has been done away with; BREAK is used to abort an INPUT.

Scanning the ROM, you'll find very little in common with the ZX81. The restarts have been completely changed, as have the various data tables. The character font table is nowhere to be found; one correspondent suggested that these are stored in the custom chip. In fact, the area from 1E6B-1FFF is blank (all FF)... suggesting that EPROMs with additional features could be used.

During operation, the I register contains 0! This suggests that the font table is at 0000 (which it is not). Changing it has no visible effect, so it is now available for use by m/c programmers. IX is still used as the interrupt return vector, and IY still points to the start of the system variables. AF' is also still used as in the Sinclair system. Also as in the Sinclair ROM, the exchange registers are used by the floating-point calculator. However, they also appear to be used in other ROM operations, so it may not be safe to use them with the impunity we're accustomed to.

USR still passes and returns the contents of BC. The "1 REM" address for machine-code is now 17307 (instead of 16514). Without the color module attached, the PAPER and INK commands are accepted (values 0-255), but without visible effect.

High-res capability is hinted at, but no mention is made in the manual. Perhaps there's something in the Chinese manual; I'll let you know if my Chinese friend can find anything about this. [There isn't.] Similarly, the color module is a mystery box; I don't have one (yet), and doubt whether I'd be much inclined to mess with it even when I get one, based on negative reports I've received.

The box claims auto-repeat on some keys; not so, at least not on my machine.

Before I end off, I'll point out one last feature that is simultaneously a blessing and a curse. That's the RESET button, which is in the upper right corner. Though it's just a CPU RESET switch, it's not the hard reset we're used to. It's actually a "soft" reset! After a reset, your BASIC program is still there! However, it's possible that your variables area will be zoofed. The curse is that it is very easy for ZX81 users to hit this by mistake in reaching for 0 or DELETE, which would be catastrophic with a true Timex-compatible ROM.

This is truly an orphan with personality; I like it, and suspect that others will also. If I can convince myself that there is enough of a market for software for this machine, (including adaptations of Timex software), I will readily support it. Let me know if you're interested.

STORING AND RECALLING SCREENS

... by Jay Mundy

Here is a fairly short but extremely powerful machine code utility that enables you to instantly store and recall up to five screens (including attributes) at the touch of a button.

Listing 1 sets up the BASIC variables and pokes the machine code routine into memory. It will automatically be erased when you type in Listing 2.

After RUNNING Listing 1, type in Listing 2 and ENTER GOTO 9000. (RUN must not be used because it will wipe out the BASIC variables)

You are presented with a menu which gives you the option to either "L"- load a screen from tape, "S"- store the current screen to one of 5 memory banks, or "R"- recall one of the 5 memory banks to the screen.

Although this program uses all 24 lines of the screen, the bottom two lines are occupied by the menu.

This routine can be easily implemented into other programs but uses quite a considerable chunk of memory (about 35K).

The program and screens can be SAVED on tape by using GOTO 9400. If you just wish to SAVE the utility (no screens), use GOTO 9500.

In case you decide to modify this program (perhaps to save memory by storing fewer screens), I have included a table indicating where the utility and various screen banks are stored in memory.

Listing 1

```
9000 CLEAR 30788
9100 FOR f=65350 TO 65361
9110 READ x
9120 POKE f,x
9130 NEXT f
9140 DATA 33,0,64,17,80,195,
      1,0,27,237,176,201
9200 DIM a(5)
9210 FOR f=1 TO 5
9220 READ a(f)
9230 NEXT f
9240 DATA 228,201,174,147,
      120
```

Listing 2

```
9000 PRINT #1;"L- LOAD      S-
      STORE      R- RECALL"
9010 LET i= PEEK 23556
9020 GOTO 9010+(90 AND i=76)
      +(190 AND i=83)+(290
      AND i=82)
9100 REM LOAD SCREEN
9110 BEEP .2,30: INPUT ;
9120 PRINT #1; TAB 8; FLASH
      1;"LOADING SCREEN"
9130 LOAD "" SCREEN$
9140 GOTO 9000
```

```

9200 REM STORE SCREEN
9210 BEEP .2,30: INPUT ;
9220 PRINT #1;"STORE IN WHICH
      H BANK? (1-5)"
9230 LET i$= INKEY$
9240 IF i$<"1" OR i$>"5"
      THEN GOTO 9230
9250 POKE 65351,0:
      POKE 65352,64
9260 POKE 65354,69:
      POKE 65355,a( VAL i$)
9270 INPUT ;
9280 RANDOMIZE USR 65350
9290 GOTO 9000
9300 REM RECALL SCREEN
9310 BEEP .2,30: INPUT ;
9320 PRINT #1;"RECALL WHICH
      BANK? (1-5)"
9330 LET i$= INKEY$
9340 IF i$<"1" OR i$>"5"
      THEN GOTO 9330
9350 POKE 65351,69:
      POKE 65352,a( VAL i$)
9360 POKE 65354,0:
      POKE 65355,64
9370 INPUT ;

```

```

9380 RANDOMIZE USR 65350
9390 GOTO 9000
9400 REM SAVE PROGRAM
9410 SAVE "Scrnstore" LINE
      9600: SAVE "Scrnbanks"
      CODE 30789,34573
9420 GOTO 9000
9500 REM SAVE ROUTINE
9510 SAVE "Scrnstore" LINE
      9600: SAVE "Scrncode"
      CODE 65350,12
9520 GOTO 9000
9600 LOAD "" CODE
9610 GOTO 9000

```

Storage table

Utility	65350 - 65361
Bank #1	58437 - 65348
Bank #2	51525 - 58436
Bank #3	44613 - 51524
Bank #4	37701 - 44612
Bank #5	30789 - 37700

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Topsy Turvey

This routine is an interesting means of turning the display upside down, the code is loaded to 32000 but it is relocatable and can be placed anywhere you wish. Use it by RANDOMIZE USR address. This one came from the I.O.W. and was written by David Hiscock.

```

10 RESTORE : LET t=0
20 FOR l=0 TO 117: READ a: POK
E 32000+l,a: LET t=t+a: NEXT l
30 IF t<>10795 THEN PRINT "ERR
OR IN DATA!!"
40 DATA 17,0,88,33,160,90,6,11
,14,32,197,26,79,126,18,113,193,
19,35,13,32,244,197,1,64,0
50 DATA 167,237,66,193,16,232,
17,0,64,33,160,87,6,6,14,3,197,6
,8,197,6,32,26,79,126,18,113
60 DATA 19,35,16,247,229,235,1
,224,0,9,235,225,1,32,1,167,237,
66,193,16,227,229,235,1
70 DATA 224,7,167,237,66,235,2
25,9,193,16,210,13,121,254,2,32,
10,17,192,64,33,224,79,6,2,24
80 DATA 194,254,1,121,192,17,0
,72,33,160,79,6,3,24,180

```


Reprinted from the Data Expansion - the newsletter of the
Fort Worth T/S Users Group.

RENUM - A ZX81 or TS1000 Utility
By Geoffrey Byrne...ZX Computing Aug/Sept 84

I have discovered something I have not read about elsewhere. The Sinclair manual says that the highest line number allowable is 9999. Although this is so, in practice line numbers higher than this may be utilized using the Renumber Routine which follows.

An advantage of this is that the lines pushed over the 10000 limit cannot be re-edited and are therefore safe from tampering. This could be useful in preserving data held in strings, etc.

Enter the following program:

```
10 REM XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
20 REM ***LOADER***
30 FOR J=16516 TO 16560
40 INPUT N
50 PRINT AT 18,8;J,N
60 SCROLL
70 POKE J,N
80 NEXT J
```

Run the program and enter the following data checking carefully as you go:

33,125,64,17,0,0,126,230,192,192,229,70,35,78,35,235,229,237,
66,225,56,18,193,124,2,3,125,2,1,10,0,9,235,78,35,70,35,9,24,
222,96,105,193,24,239

Now enter as direct commands:

```
POKE 16514,0
POKE 16515,0
SAVE "RENUMBER"
```

Having SAVED the program, enter RUN and then the following:

```
9990 REM
9991 FOR J=1 TO 15
9992 PRINT "ANYTHING YOU LIKE"
9993 NEXT J
```

Check this by entering:

```
SLOW
RUN 9990
```

Now enter RAND USR 16516 and LIST. You should now find some very odd looking line numbers in the listing. The listing should be as follows:

```
A000 REM
A010 FOR J=1 TO 15
A020 PRINT "ANYTHING YOU LIKE"
A030 NEXT J
```

As you can see, the '10' of 10,000 has been replaced by 'A' as in Hexidecimal, but the other numbers remain in the decimal! Since the first character of the line number is not recognized by the ZX81 as a number, it cannot be accessed for editing, and is therefore incorruptable once placed over 10000.

These lines ca be accessed from within a program. Enter the following:

```
100 LET A=10010
110 CLS
120 GOTO A
RUN 100 or GOTO 100
```

As can be seen from these examples, the ZX81 equates 10010 with A010. Using REM statements to pad out the numbers of the lines under 10000 is the only way to push a routine over the magic limit, using the RENUMBER routine. I hope some people will find a genuine use for these safe lines.

dB

BY RICH TENNANT



***** Note From The Editor:

A new member of our group cornered me the other day to ask if there was anyone around who still serviced Timex computer products. Apparently attached to his 1000 (just like me), he despaired that since it died, there seemed to be no one to turn to.

And he's right. Timex's Little Rock service location will no longer accept Timex Computer product for repair. The customer service rep I spoke to indicated that machines still wait in their back rooms for parts that are no longer available. They intend to close up the computer shop after they repair those machines, and the queue is officially closed, as of 4/22/87.

The oddball parts in Timex products are Unique Logic Arrays: what Sinclair called by the name SCLD's (Sinclair Computer Logic Devices). They are wonderful chips, replacing whole boards of discrete logic pieces. The designer describes the pinouts, functions, timing, etc., with a "logic equation", and little parts of the chip are selectively turned on or off, making a unique logical path through a matrix of similar logic pieces arrayed along the chip. The chip manufacturer makes the standard array packages with the designer's customizing instructions to change the array. It's CHEAP. It's COMPACT. It's an electronic RUBIK's cube. You sure can't see what is hidden inside.

All the main logic manufacturers are moving in this direction, with programmable versions that can be "burned" like an EPROM, as well as the factory mass-production "masked" versions that are in Timex and Sinclair computers. Sinclair was ahead of the game: IBM's new computers prove it. (IBM wants to out-manuever the "clones", and they are doing it with proprietary parts, yes, ULAs. Very sophisticated ones. But seven years ago, Sir Clive had solved that puzzle of computer manufacture and marketing economics.)

Which is what causes our problem today. ULAs are extremely tough to copy or pirate. Timex won't give away that "equation" for the 2068's SCLD anytime soon, and NCR, the array maker, is not stupid. Why would they damage their credibility as trusty secret-keepers? Same situation for Ferranti Ltd. and the ZX and Spectrum SCLDs. Given all the time in the world, someone may "reverse-engineer" an approximation. Good Luck! There are still such things as copyright laws, though (except in the Far East: see George's "1000 Clone" comments above, and the story of my pc8300). So what we've got is a proprietary part no longer in production, and supplies are drying up. If not for the one-of-a-kind nature of the ULA, ANYBODY with a soldering iron could repair their Sinclair.

There seem to be a couple of enterprising user groups trying to make bulk purchases of the ULAs (I suppose they are competing with Timex Service for the stuff!). As I get more info on their success, I'll pass it along. Perhaps we'll explore the subject of computer repairs in future issues. The Z80A processor is easy to find; about five bucks--- and most of the other chips are easy to mail-order from electronic supply houses. The ROMs are a cinch to PEEK at --- and indeed, there are already alternatives to the ROMs, such as the 1000's "fixed" ROM by Thomas Woods/Syncware....

One more solution, in the near term anyway, may be in the supplies of "brand-new" and "slightly-used" Timex and Sinclair computers.

Sunset Electronics, out in San Francisco, seems to be a good supply of "new" Timexes, as well as E. Arthur Brown Company in Minnesota.

As for used computers, how many of us know one or two lurking in the closets of our friends? For the right price, which is certainly less than a likely repair bill, you can get back in the computing biz. Make them an offer before they do their spring cleaning....

The point is, one step in protecting your investment, whether it is in time, money, or involvement, is to keep in touch with those machines lurking around in your neighborhood or in the magazines. A spare might be a good idea.

Don't give up even if your computer does.

Cleanup/Backup para el QL

by Mark Fisher

As you begin to amass files and programs on the QL's little matchbook-sized cartridges, you will run into the problem of generating backups of your files. Our trusty manual tells us to "simply" type "COPY mdv1_file.name TO mdv2_file_n_bak" or some such. Not impossible, but if you're trying to copy more than one file it can add up to an awful lot of typing.

CLONE represents another way of generating backups - but it requires a DATA statement containing the names of the files to be copied: another quantity of typing.

CLEANUP/BACKUP offers a third alternative. Like CLONE, it allows the user to duplicate an entire source cartridge (on mdv2_), but, in addition it allows you to select the files to be copied. In this way, you can both eliminate those earlier versions of the program you've been working on, and re-arrange the order of programs in the cartridge for easier reference.

For instance, you could re-arrange your files in alphabetical order (with BOOT first, of course); or sort your ARCHIVE data files so as to group all the screen files, then all the program files, then all the data files in sequence for a given application.

To use the program, LOAD it, place the desired source cartridge in mdv2_, and RUN. You will be prompted to make sure there is a destination cart in mdv1_. Upon confirming that, you will be shown a list of the contents of both drives, as well as a menu of your options. They are generally self-explanatory, but I should stress that the (D)delete option deletes the file from mdv2_, not mdv1_.

The Works:

CLEANUP/BACKUP is divided into three parts. Parts one and two are fully automatic. Part one (lines 100 - 270) temporarily sets up a data file on mdv2_ to hold the directory as it is read from the header. Part two (lines 280 - 340) then transfers this file to an array, and deletes the microdrive file. Part three, "select_fil," presents you with the contents of mdv1_ and mdv2_, and allows you to choose your next course of action. Line 1020 allows you to easily update the copy of the program on your microdrive, if you improve the program.

As it is set up now, it will handle cartridges with up to 14 files. The limitation stems from the size of the display. It would be possible to use the WINDOW and SCROLLING facilities of SUPERbasic to remove this limitation, but I'm not up to that yet. Anyone that is interested in the project should feel free to write it up.

```

100 REMark ***** cleanup/ backup utility *****
110 WINDOW 500,235,0,0: INK 7: PAPER 0
120 REMark Create file to hold DIR
130 OPEN_NEW#4,mdv2_direct
140 DIR #4, mdv2_
150 PRINT #4, CHR$(26)
160 CLOSE #4
170 PRINT 'Loading Array with file names'
180 OPEN_IN #4,mdv2_direct : CLS
190 LET count=0
200 REPEAT rd
210   count=count+1
220   INPUT #4, a$
230   IF EOF (#4): EXIT rd
240 END REPEAT rd
250 count=count-3
260 PAUSE 200
270 CLOSE #4
280 DIM dir$(count,30)
290 OPEN_IN #4,mdv2_direct : CLS
300 FOR i=0 TO count
310   INPUT #4, dir$(i)
320 END FOR i
330 CLOSE #4
340 DELETE mdv2_direct
350 select_fil
360 STOP
370 DEFINE PROCEDURE prdir
380   FOR i=0 TO count
390     PRINT TO 40;dir$(i)
400   END FOR i
410 END DEFINE
420 DEFINE PROCEDURE select_fil
430   CLS
440   PRINT 'Cartridge in MDV1_? Press space to continue - (Q)
to Quit ': r$=INKEY$(-1)
450   CLS : IF r$<>' ' THEN EXIT select_fil
460   PRINT 'MDV1 now contains:': TO 40;'MDV2 now contains:'\
470   prdir : num=2 : AT 2,0: DIR mdv1_
480   AT 20,0
490   PRINT 'Press : (C)opy all files -- MDV1 WILL BE ERASED
ENTER) to copy selected file'
500   PRINT '          (D)delete selected program
Format MDV1'
510   PRINT '          (^ or v) Select files
Quit'
```

```

550 REPEAT updn
560 AT num+2,35: PRINT'---'
570 key = CODE (INKEY$(-1))
580 AT num+2,35: PRINT'
590 num=num+(key=216)-(key=208)
600 IF num>count THEN num=count
610 IF num<2 THEN num=2
620 IF key=10 THEN cpy:AT 2,0: DIR mdv1_
630 IF key=CODE('c') THEN cpyall
640 IF key=CODE('d') THEN del
650 IF key=CODE('f') THEN fmt
660 IF key=CODE('q') OR key=CODE('Q') THEN EXIT updn
670 END REPEAT updn
680 END DEFINE

690 DEFINE PROCEDURE fmt
700 a$=dir$(0, 1 TO ' ' INSTR(dir$(0))-1) : PAUSE 50 : a$=a$(
1 TO 6)&_bak'
710 AT 19,0: PRINT 'Press ENTER to format as'!a$!', Q to quit
, or type new vol. name:': INPUT !q$;
720 CLS 3
730 IF q$='q' OR q$='Q' THEN RETURN
740 IF q$()' THEN a$=q$
750 AT 19,0: FORMAT 'mdv1_'&a$ ;: CLS 3
760 AT 2,0: DIR mdv1_: PRINT '
770 END DEFINE
780 DEFINE PROCEDURE cpy
790 a$=dir$(num)
800 IF a$='000000' THEN RETURN
810 COPY 'mdv2_'&a$ TO 'mdv1_'&a$
820 END DEFINE
830 DEFINE PROCEDURE cpyall
840 fmt
850 FOR num=2 TO count
860 cpy
870 END FOR num
880 AT 2,0
890 DIR mdv1_
900 PRINT '
910 END DEFINE
920 DEFINE PROCEDURE del
930 a$=dir$(num)
940 IF a$='000000' THEN RETURN
950 AT 19,0: PRINT 'DELETING 'a$;'. Press SPACE to continue,
(Q) to abort:':q$=INKEY$(-1)
960 CLS 3: IF q$='q' THEN RETURN
970 AT num+2,40: OVER 1 : PRINT '-----';
OVER 0
980 DELETE 'mdv2_'&a$
990 dir$(num)='000000'
1000 END DEFINE
1010 STOP
1020 DELETE mdv2_cleanup: SAVE mdv2_cleanup

```

```

10 PRINT "WHAT IS THE PROBABIL
ITY OF LIFE"
20 PRINT "IN THE UNIVERSE ?"
30 PRINT "YOU CAN CALCULATE IT
YOURSELF."
40 PRINT "THE DRAKE* EQUATION
(SOMETIMES"
50 PRINT "CALLED THE GREENBANK
EQUATION)"
60 PRINT "ESTIMATES THE NUMBER
OF CIVIL-"
70 PRINT "IZATIONS IN OUR GALA
XY ABLE TO"
80 PRINT "CONTACT EACH OTHER."
90 PRINT
100 PRINT "      N=RPELICD  (*)

110 PRINT
120 PRINT "  * FRANK DRAKE, CORNE
LL UNIV.1961"
130 PRINT AT 15,0:"ANSWER THE F
OLLOWING QUESTIONS"
140 PRINT "TO CALCULATE N. (VALU
E+ENTER)"
150 PRINT AT 19,0:"PRESS ""X""
TO CONTINUE."
160 IF INKEY$(<>)"X" THEN GOTO 16
0
170 CLS
180 PRINT "R.RATE OF STAR FORMA
TION (STARS"
190 PRINT "PER YEAR)? ";
200 INPUT R
210 PRINT R
220 PRINT "P.DECIMAL FRACTION O
F THESE "
230 PRINT "STARS THAT HAVE PLAN
ETS (SINGLE,"
240 PRINT "NEAR TYPE G)? ";
250 INPUT P
260 PRINT P
270 PRINT "E.NUMBER OF PLANETS
PER SOLAR"
280 PRINT "SYSTEM THAT WILL SUP
PORT LIFE"
290 PRINT "(I.E.EARTH-LIKE)? ";
300 INPUT E
310 PRINT E
320 PRINT "L.DECIMAL FRACTION O
F THESE ON"
330 PRINT "WHICH LIFE ARISES? "
;
340 INPUT L
350 PRINT L
360 PRINT "I.DECIMAL FRACTION T
HAT DEVELOP"
370 PRINT "INTELLIGENCE? ";
380 INPUT I
390 PRINT I
400 PRINT "C.DECIMAL FRACTION T
HAT DEVELOP"
410 PRINT "TECHNOLOGY AND CHOOB
E TO"
420 PRINT "COMMUNICATE? ";
430 INPUT C
440 PRINT C
450 PRINT "D.YEARS DURATION OF
THESE COM-"
460 PRINT "MUNICATIVE CIVILIZAT
IONS?"
470 INPUT D
480 PRINT D
490 LET N=INT (R*P*E*L*I*C*D)
500 PRINT
510 PRINT "N = ";N

```



VSUG

The Vancouver Sinclair Users Group has been in existence since 1982. We are a support group for the owners and users of all SINCLAIR and TIMEX computers.

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